Attachment A to Resolution No. R4-2005-XXXX

Proposed Amendment to the Water Quality Control Plan – Los Angeles Region

to Incorporate a
Total Maximum Daily Loads (TMDLs) for
Organochlorine (OC) Pesticides,
Polychlorinated Biphenyls (PCBs) and Siltation in
Calleguas Creek, Its Tributaries, and Mugu Lagoon

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Proposed for adoption by the California Regional Water Quality Control Board, Los Angeles Region on July 7, 2005.

Amendments

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List of Figures, Tables, and Inserts

Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)

Tables

7-17 Calleguas Creek Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation TMDL

7-17.1 Calleguas Creek Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation TMDL: Elements

7-17.2 Calleguas Creek Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation TMDL: Implementation Schedule

Chapter 7. Total Maximum Daily Loads (TMDLs)
Calleguas Creek Organochlorine Pesticides, Polychlorinated Biphenyls, and Siltation TMDL

Add:

This TMDL was adopted by the Regional Water Quality Control Board on [Insert date].

This TMDL was approved by:

The State Water Resources Control Board on [Insert date].
The Office of Administrative Law on [Insert date].
The U.S. Environmental Protection Agency on [Insert date].

The following table includes the elements of the TMDL:

Table 7-17.1. Calleguas Creek Watershed OC Pesticides, PCBs, and Siltation TMDL: Elements

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
Problem Statement	Eleven of fourteen reaches in the Calleguas Creek Watershed (CCW) were identified on the 2002 303(d) list of water-quality limited segments as impaired due to elevated levels of organochlorine (OC) pesticides and/or polychlorinated biphenyls (PCBs) in water, sediment, and/or fish tissue. Additionally, Mugu Lagoon was listed as impaired for sedimentation/siltation. OC pesticides and PCBs can bioaccumulate in fish tissue and cause toxicity to aquatic life in estuarine and inland waters. Siltation may transport OC Pesticides and PCBs to surface waters and impair aquatic life and wildlife habitats.
Numeric Targets	The following tables provide the targets for water, fish tissue, and sediment for this TMDL. Water column targets were derived from the California Toxic Rule (CTR) water quality criteria for protection of aquatic life. Chronic criteria (Criteria Continuous Concentration, or CCC) were applied unless otherwise noted in the table below:

	Water Quality Targets (ng/L)[1]	
Constituent	Freshwater	Marine[2]
Aldrin	300.0	130.0
Chlordane	4.3	4.0
Dacthal	3,500,000.0	(a)[3]
4,4'-DDD[4]	(a)[3]	(a)[3]
4,4'-DDE[5]	(a)[3]	(a)[3]
4,4'-DDT[6]	1.0	1.0
Dieldrin	56.0	1.9
Endosulfan I	56.0	8.7
Endosulfan II	56.0	8.7
Endrin	36.0	2.3
HCH (alpha-BHC[7])	(a)[3]	(a)[3]
HCH (beta-BHC)	(a)[3]	(a)[3]
HCH (delta-BHC)	(a)[3]	(a)[3]

[1] ng/L: nanogram per litter

[2] Marine numeric targets applied to Mugu Lagoon

[3] Numeric targets have not been established for these constituents

[4] DDD: Dichlorodiphenyldichloroethane

[5] DDE: Dichlorodiphenyldichloroethylene

[6] DDT: Dichlorodiphenyltrichloroethane

[7] BHC: Hexachlorocyclohexane

[8] Applies to sum of all congener or isomer or homolog or Aroclor analyses

T E N T A T I V E

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL		
	HCH (gamma BHC)	950.0	160.0
	Heptachlor	3.8	3.6
	Heptachlor Epoxide	3.8	3.6
	PCBs	140.0[8]	30.0[7]
	Toxaphene	0.2	0.2

Fish tissue targets are derived from CTR human health criteria for consumption of organisms.

Fish Tissue Targets (ng/Kg)

Constituent	
Aldrin	50.0
Chlordane	830.0
Dacthal	(a)[1]
4,4'-DDD	45,000.0
4,4'-DDE	32,000.0
4,4'-DDT	32,000.0
Dieldrin	650.0
Endosulfan I	65,000,000.0
Endosulfan II	65,000,000.0
Endrin	3,200,000.0
HCH (alpha-BHC)	1,700.00
HCH (beta-BHC)	6,000.0
HCH (delta-BHC)	(a)[1]
HCH (gamma BHC)	8,200.
Heptachlor	2,400.0
Heptachlor Epoxide	1,200.0
PCBs	5,300.0[2]
Toxaphene	9,800.0

Sediment targets were derived from sediment quality guidelines contained in National Oceanographic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT, Buchman, 1999).

Sediment Quality Targets (ng/dry Kg)

Constituent	Freshwater, TEL[3]	Marine[4], ERL[5]
Aldrin	(a)[1]	(a)[1]
Chlordane	4,500.0	500.0
Dacthal	(a)[1]	(a)[1]
4,4'-DDD	3,500.0	2,000.0
4,4'-DDE	1,400.0	2,200.0
4,4'-DDT	(a)[1]	1,000.0

[1] Numeric targets have not been established for these constituents

[2] Applies to sum of all congener or isomer or homolog or Aroclor analyses

[3] TEL = Threshold Effects Level

[4] Marine numeric targets applied to Mugu Lagoon

[5] ERL = Effects Range-Low.

T E N T A T I V E

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL		
	Dieldrin	2,900.0	20.0
	Endosulfan I	(a)[1]	(a)[1]
	Endosulfan II	(a)[1]	(a)[1]
	Endrin	2,700.0	(a)[1]
	HCH (alpha-BHC)	(a)[1]	(a)[1]
	HCH (beta-BHC)	(a)[1]	(a)[1]
	HCH (delta-BHC)	(a)[1]	(a)[1]
	HCH (gamma BHC)	940.0	(a)[1]
	Heptachlor	(a)[1]	(a)[1]
	Heptachlor Epoxide	600.0	(a)[1]
	PCBs	34,000.0[2]	23,000.0
	Toxaphene	(a)[1]	(a)[1]
	Siltation Targets This TMDL includes two numeric targets for siltation reduction and maintenance of existing habitat in Mugu Lagoon which are listed below: • Siltation reduction Annual average reduction in the import of silt of 5,200 tons/year, which will be measured at the US Naval Base total suspended sediment gauge at the entrance to Mugu Lagoon. • Maintenance of existing habitat in Mugu Lagoon Preservation of the existing 1400 acres of aquatic habitat in Mugu Lagoon.		
Source Analysis	Monitoring data from major NPDES discharges and land use runoff were analyzed to estimate the magnitude of OC pesticides and PCBs loads to Calleguas Creek, its tributaries and Mugu Lagoon. The largest source of OC pesticides in the listed waters is agricultural runoff. Most PCB residues are due to past use of PCBs as coolants and lubricants in transformers, capacitors, and other electrical equipment. Atmospheric deposition is also a potential source of PCBs. Urban runoff and POTWs are minor sources of OC pesticides and PCBs. Data analysis suggests that groundwater, atmospheric deposition, and imported water are not significant sources of OC pesticides, PCBs, or sediment. Further evaluation of these sources is set forth in the Implementation Plan.		
Linkage Analysis	The linkage analysis is based on a conceptual model for the fate, transformation, and uptake of OC pesticides and PCBs and a mass-balance model that connects the sources of OC pesticides and PCBs to their fate and transport in Calleguas Creek, its tributaries, and Mugu Lagoon. The linkage analysis indicates: 1) OC pesticides		

<table>
<tr><th>TMDL Element</th><th>Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL</th></tr>
<tr><td></td><td>and PCBs concentrations in tissue are proportional to OC pesticides and PCBs concentrations in sediments; 2) OC pesticides and PCBs concentrations in water are a function of OC pesticides and PCBs concentrations in sediment; and 3) OC pesticides and PCBs concentrations in sediment are a function of OC pesticides and PCBs loading and sediment transport. Because sediments store, convey and serve as a source of OC pesticides and PCBs, a reduction of OC pesticides and PCBs concentrations in sediment will result in a reduction of OC pesticides and PCBs concentration in the water column and fish tissue. In this linkage analysis, DDE is used as a representative constituent, because DDE is consistently detected in monitoring and exceeds numeric targets in water, sediment, and tissue samples. Also, other OC Pesticides and PCBs possess similar physical and chemical properties to DDE.</td></tr>
<tr><td>Wasteload Allocations</td><td>
1. Interim and Final WLAs* for Pollutants in Effluent for POTWs.

The interim wasteload allocations for POTWs will be re-considered by the Regional Board on a 5-year basis. This re-consideration will be based on sufficient data to calculate Interim Wasteload Allocations in accordance with SIP procedures.

a) Interim WLAs (ng/L)

<table>
<tr><td>Constituent</td><td colspan="5">POTW</td></tr>
<tr><td></td><td>Hill Canyon</td><td>Simi Valley</td><td>Moorpark</td><td>Camarillo</td><td>Camrosa</td></tr>
<tr><td></td><td>Daily</td><td>Daily</td><td>Daily</td><td>Daily</td><td>Daily</td></tr>
<tr><td>Chlordane</td><td>1.2</td><td>100.0</td><td>100.0</td><td>100.0</td><td>100.0</td></tr>
<tr><td>4,4-DDD</td><td>20.0</td><td>50.0</td><td>50.0</td><td>6.0</td><td>50.0</td></tr>
<tr><td>4,4- DDE</td><td>260.0</td><td>1.2</td><td>1.2</td><td>188.0</td><td>50.0</td></tr>
<tr><td>4,4-DDT</td><td>10.0</td><td>10.0</td><td>10.0</td><td>10.0</td><td>10.0</td></tr>
<tr><td>Dieldrin</td><td>10.0</td><td>10.0</td><td>10.0</td><td>10.0</td><td>10.0</td></tr>
<tr><td>PCBs</td><td>500.0</td><td>500.0</td><td>500.0</td><td>31.0</td><td>500.0</td></tr>
<tr><td>Toxaphene</td><td>500.0</td><td>500.0</td><td>500.0</td><td>500.0</td><td>500.0</td></tr>
</table>

* WLAs shall be applied to POTWs'effluent

b) Final WLAs (ng/L)

<table>
<tr><td>Constituent</td><td colspan="10">POTW</td></tr>
<tr><td></td><td colspan="2">Hill Canyon</td><td colspan="2">Simi Valley</td><td colspan="2">Moorpark</td><td colspan="2">Camarillo</td><td colspan="2">Camrosa</td></tr>
<tr><td></td><td>Daily</td><td>Monthly</td><td>Daily</td><td>Monthly</td><td>Daily</td><td>Monthly</td><td>Daily</td><td>Monthly</td><td>Daily</td><td>Monthly</td></tr>
<tr><td>Chlordane</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td></tr>
<tr><td>4,4-DDD</td><td>1.7</td><td>0.84</td><td>1.7</td><td>0.84</td><td>1.7</td><td>0.84</td><td>1.7</td><td>0.84</td><td>1.7</td><td>0.84</td></tr>
<tr><td>4,4- DDE</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td></tr>
<tr><td>4,4-DDT</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td><td>1.2</td><td>0.59</td></tr>
<tr><td>Dieldrin</td><td>0.28</td><td>0.14</td><td>0.28</td><td>0.14</td><td>0.28</td><td>0.14</td><td>0.28</td><td>0.14</td><td>0.28</td><td>0.14</td></tr>
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PCBs	0.34	0.17	0.34	0.17	0.34	0.17	0.34	0.17	0.34	0.17
Toxaphene	0.33	0.16	0.33	0.16	0.33	0.16	0.33	0.16	0.33	0.16

The final WLAs will be included in NPDES permits in accordance with schedule in the implementation plan. The Regional Board may revise final WLAs prior to the dates they are placed into permits and/or prior to the dates of final WLA achievement based on special studies and monitoring of this TMDL.

2. Interim and Final WLAs for Pollutants in Sediment for Stormwater Permittees

a) Interim WLAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	25.0	17.0	48.0	3.3	3.3	3.4
4,4-DDD	69.0	66.0	400.0	290.0	14.0	5.3
4,4- DDE	300.0	470.0	1,600.0	950.0	170.0	20.0
4,4-DDT	39.0	110.0	690.0	670.0	25.0	2.0
Dieldrin	19.0	3.0	5.7	1.1	1.1	3.0
PCBs	180.0	3,800.0	7,600.0	25,700.0	25,700.0	3,800.0
Toxaphene	22,900.0	260.0	790.0	230.0	230.0	260.0

Compliance with sediment based WLAs is measured as an in-stream annual average at the base of each subwatershed where the discharges are located.

b) Final WLAs (ng/g)

Constituent	Subwatershed					
	Mugu Lagoon[1]	Calleguas Creek	Revolon Slough	Arroyo Las Posas	Arroyo Simi	Conejo Creek
Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0	2.0
4,4- DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
PCBs	180.0	120.0	130.0	120.0	120.0	120.0
Toxaphene	360.0	0.6	1.0	0.6	0.6	0.6

[1] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2 .

Compliance with sediment based WLAs is measured as an in-stream annual average at the base of each subwatershed where the discharges are located.

3. Final WLAs for Pollutants in Water Column for Minor Point Sources

WLAs for pollutants in water column are allocated below to

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<tr><th>TMDL Element</th><th>Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL</th></tr>
<tr><td></td><td>
minor point sources enrolled under NPDES permits or WDRs, which discharge to Calleguas Creek.

Constituent | Daily Maximum (ng/L) | Monthly Average (ng/L)
Chlordane | 1.2 | 0.59
4,4-DDD | 1.7 | 0.84
4,4- DDE | 1.2 | 0.59
4,4-DDT | 1.2 | 0.59
Dieldrin | 0.28 | 0.14
PCBs | 0.34 | 0.17
Toxaphene | 0.33 | 0.16

4. Siltation WLA for MS4

MS4 dischargers will receive an allocation of 2,496-tons/yr. reduction in sediment yield to Mugu Lagoon. The baseline from which the load reduction will be evaluated will be determined by a special study of this TMDL. The load allocation will apply after the baseline is established, as described in the Implementation Plan.
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<tr><td>Load Allocations</td><td>
Compliance with sediment based LAs listed below is measured as an in-stream annual average at the base of each subwatershed.

1. Interim and Final Load Allocations

a) Interim Sediment LAs (ng/g)

Constituent | Subwatershed
 | Mugu Lagoon[1] | Calleguas Creek | Revolon Slough | Arroyo Las Posas | Arroyo Simi | Conejo Creek
Chlordane | 25.0 | 17.0 | 48.0 | 3.3 | 3.3 | 3.4
4,4-DDD | 69.0 | 66.0 | 400.0 | 290.0 | 14.0 | 5.3
4,4- DDE | 300.0 | 470.0 | 1,600.0 | 950.0 | 170.0 | 20.0
4,4-DDT | 39.0 | 110.0 | 690.0 | 670.0 | 25.0 | 2.0
Dieldrin | 19.0 | 3.0 | 5.7 | 1.1 | 1.1 | 3.0
PCBs | 180.0 | 3,800.0 | 7,600.0 | 25,700.0 | 25,700.0 | 3,800.0
Toxaphene | 22900.0 | 260.0 | 790.0 | 230.0 | 230.0 | 260.0

[1] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2.

b) Final Sediment LAs (ng/g)

Constituent | Subwatershed
 | Mugu Lagoon[1] | Calleguas Creek | Revolon Slough | Arroyo Las Posas | Arroyo Simi | Conejo Creek
</td></tr>
</table>

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TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL

Chlordane	3.3	3.3	0.9	3.3	3.3	3.3
4,4-DDD	2.0	2.0	2.0	2.0	2.0	2.0
4,4- DDE	2.2	1.4	1.4	1.4	1.4	1.4
4,4-DDT	0.3	0.3	0.3	0.3	0.3	0.3
Dieldrin	4.3	0.2	0.1	0.2	0.2	0.2
PCBs	180.0	120.0	130.0	120.0	120.0	120.0
Toxaphene	360.0	0.6	1.0	0.6	0.6	0.6

[1] The Mugu Lagoon subwatershed includes Duck Pond/Agricultural Drain/Mugu/Oxnard Drain #2.

2. Siltation LAs

Agricultural dischargers will receive an allocation of 2,704 tons/yr. Reduction in sediment yield to Mugu Lagoon. The baseline from which the load reduction will be evaluated will be determined by a special study of this TMDL. The load allocation will apply after the baseline is established, as described in the Implementation Plan.

Margin of Safety

This TMDL relies on an implicit margin of safety, by incorporating conservative assumptions throughout its development, including:

- ♣ Basing percent reductions on the historical data set of water and fish tissue concentrations, which does not reflect the effects of attenuation the over the past ten years.
- ♣ Determining the percent reduction in sediment, by basing it on the greater percent reduction of either water or fish tissue concentrations based on available data.
- ♣ Reducing the allowable concentration for upstream subwatersheds, to ensure protection of those subwatersheds downstream from upstream inputs.
- ♣ Choosing Threshold Effects Levels (TELs) and Effects Range Lows (ERLs) as numeric targets for sediment, which are the most protective applicable sediment guidelines.
- ♣ Selecting the more stringent of the allowable concentration (as calculated by percent reduction methodology) or the numeric target for sediment (TEL or ERL), when available, as the WLA and LA for all reaches with 303(d) listings for sediment.

Future Growth

Ventura County accounts for slightly more than 2% of the state's residents with a population of 753,197 (US Census Bureau, 2000). GIS analysis of the 2000 census data yields a population estimate of 334,000 for the CCW, which equals about 44% of the county population. According to the Southern California Association of Governments (SCAG), growth in Ventura County averaged about 51% per decade from 1900-2000; with growth exceeding 70% in the 1920s, 1950s, and 1960s. Significant population growth is expected to occur within and near present city limits until at least

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
	2020. Since most of the listed OCs and PCBs in the CCW are banned, this growth is not expected to increase current loads. Urban application of those OC pesticides which are still legal (dacthal and endosulfan) may increase, but overall use may decrease because urban expansion tends to reduce total acreage of agricultural land. Population growth may result in greater OC loading to POTW influent from washing food products containing OC residues. This loading may be proportional to the increase in population, if per capita domestic water use and pesticide load per household remain constant. Increased flow from POTWs should not result in impairment of the CCW as long as effluent concentration standards are met for each POTW. As urban development occurs, construction activities may have a range of effects on OC loading to the CCW. Exposure of previously vegetated or deeply buried soil might lead to increased rates of transportation and volatilization. Conversely, urbanization of open space and/or agriculture areas may cover OC pesticides bound to sediments. Future growth in the CCW may result in increased groundwater concentrations of currently used OC pesticides. This is a potential concern for dacthal, which is still used and has been found in groundwater (although current levels of dacthal are significantly lower than all available targets). The effects of future growth upon PCB loads are unknown, but not likely to prove significant, since atmospheric deposition and accidental spills are the primary loading pathways. Any increase in OCs due to population growth may be offset by decreased inputs from banned OCs, as their presence attenuates due to fate and transport processes.
Critical Conditions	The linkage analysis found correlation between concentrations of OC pesticides and PCBs in water and total suspended solids (TSS), and a potential correlation between OC pesticides and PCBs concentrations in water and seasonality (wet vs. dry season). A similar correlation between sediment loading and wet weather is also noted. OC pesticides and PCB pollutants are of potential concern in the Calleguas Creek Watershed due to possible long-term loading and food chain bioaccumulation effects. There is no evidence of short-term effects. However, pollutant loads and transport within the

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
	watershed may vary under different flow and runoff conditions. Therefore the TMDLs consider seasonal variations in loads and flows but are established in a manner which accounts for the longer time horizon in which ecological effects may occur. Wet weather events, which may occur at any time of the year, produce extensive sediment redistribution and transport downstream. This would be considered the critical condition for loading. However, the effects of organochlorine compounds are manifested over long time periods in response to bioaccumulation in the food chain. Therefore, short-term loading variations (within the time scale of wet and dry seasons each year) are not likely to cause significant variations in beneficial use effects. Therefore, although seasonal variations in loads and flows were considered, the TMDL was established in a manner which accounts for the longer time horizon in which ecological effects may occur
Implementation Plan	The final WLAs will be included in NPDES permits in accordance with the compliance schedules provided in Table 7-17.2. The Regional Board may revise these WLAs based on additional information developed through Special Studies and/or Monitoring of this TMDL. WLAs established for the five major POTWs in this TMDL will be implemented through NPDES permit limits. The proposed permit limits will be applied as end-of-pipe concentration-based effluent limits for POTWs. Compliance will be determined through monitoring of final effluent discharge as defined in the NPDES permit. The implementation plan for POTWs focuses on implementation of source control activities. Consideration of annual averaging of compliance data will be evaluated at the time of permit renewal based on available information, Regional Board policies, and US EPA approval. In accordance with current practice, a group concentration-based WLA has been developed for MS4s, including the Caltrans MS4. The grouped allocation will apply to all NPDES-regulated municipal stormwater discharges in the CCW. Other NPDES-regulated stormwater permittees will be assigned a concentration-based WLA consistent with the interim and final WLAs set forth above. Stormwater WLAs will be incorporated into the NPDES permit as receiving water limits measured at the downstream points of each subwatershed and are expected to be achieved through the implementation of BMPs as outlined in the implementation plan.

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
	The Regional Board will need to ensure that permit conditions are consistent with the assumptions of the WLAs. If BMPs are to be used, the Regional Board will need to detail its findings and conclusions supporting the use of BMPs in the NPDES permit fact sheets. Should federal, state, or regional guidance or practice for implementing WLAs into permits be revised, the Regional Board may reevaluated the TMDL to incorporate such guidance. LAs will be implemented through the State's Nonpoint Source Pollution Control Program (NPSPCP). The LARWQCB is developing a Conditional Waiver for Irrigated Lands, which includes monitoring at sites subject to approval by the Executive Officer of the Regional Board. Should adoption of the Conditional Waiver be delayed, monitoring will be required as part of this TMDL. Studies are currently being conducted to assess the effectiveness of BMPs for reduction of pollutants from agricultural operations. Results will be used to develop Agricultural Water Quality Management Plans, including the implementation of agricultural BMPs. Additionally, an agricultural education program will be developed to inform growers of the recommended BMPs and the Management Plan. As shown in Table 7-17.2, implementation actions will be taken by agricultural dischargers located in the CCW. The implementation of agricultural BMPs will be based on a comprehensive approach to address pollutant loads discharged from agricultural operations. The Regional Board may revise these LAs based on the collection of additional information developed through special studies and/or monitoring conducted as part of this TMDL. A number of provisions in this TMDL might provide information that could result in revisions to the TMDL. Additionally, the development of sediment quality criteria and other water quality criteria revisions may require the reevaluation of this TMDL. Finally, the use of OC pesticides in other countries which may be present in imported food products, compounded with the persistence of OC pesticides and PCBs in the environment, indicate that efforts to control sources and transport of OCs to receiving waters may not result in attainment of targets and allocations due to activities that are outside the control of local agencies and agriculture. For these reasons, the Implementation Plan includes this provision for reevaluating the TMDL to consider revised water

TMDL Element	Calleguas Creek Watershed OC Pesticide, PCBs, and Siltation TMDL
	quality objectives and the results of implementation studies, if appropriate. The siltation portion of the TMDL includes wasteload and load allocations set as an annual mass reduction from a baseline value of sediment and silt deposited in Mugu Lagoon. The baseline value of sediment and silt conveyed to Mugu Lagoon is to be determined by a TMDL Special Study and established by the Regional Board through an amendment to the TMDL. The Special Study is eight years in duration to ensure that the full range of current conditions that affect loading of sediment and siltation to Mugu Lagoon are considered. If appropriate, the Special Study may also result in a revision to the mass load reduction. The Special Study will be overseen by a Science Advisory Panel consisting of local, regional, and/or national experts in estuarine habitat biology, hydrology, and engineering. At the conclusion of the special study, the Regional Board will reconsider the TMDL to establish sustainable wasteload and load allocations recommended by the Special Study to support aquatic life and wetland habitat beneficial uses. In implementing this TMDL, staff recognize that dischargers may be implementing management measures and management practices to reduce sediment and Siltation loads through permit and waiver programs during the special studies. Further, since the effective date of the Consent Decree, reaches of Calleguas Creek have been listed due to sediment, and another TMDL may be initiated during the Special Study of this TMDL. Staff's intent is to coordinate the requirements of this TMDL with other programs that reduce sedimentation and siltation. The Special Study can consider sediment and silt load reductions through existing permits and the forthcoming conditional waiver for irrigated lands. Load and wasteload allocations become effective after the Regional Board actions based on the Special Study, nine years after the effective date of the TMDL.

Table 7-17.2 Implementation Schedule

Item	Implementation Action [1]	Responsible Party	Completion Date
1	Interim organochlorine pesticide and polychlorinated biphenyls wasteload allocations apply.	NPDES Permittees	Effective date of the amendment
2	Interim organochlorine pesticide and polychlorinated biphenyls load allocations apply.	Agricultural Dischargers	Effective date of the amendment
3	Finalize and submit workplan for organochlorine pesticide, polychlorinated biphenyls, and siltation TMDL monitoring, or finalize and submit a workplan for an Integrated Calleguas Creek Watershed organochlorine pesticide, polychlorinated biphenyls, and siltation Monitoring Program for approval by the Executive Officer. The monitoring workplan will include, but not be limited to, appropriate water, biota, sediment and siltation loading and monitoring to verify attainment of targets and protection of beneficial uses.	POTW Permittees, MS4 Permittees, Agricultural Dischargers, US Navy	6 months after effective date of the amendment
4	Initiate Calleguas Creek Watershed organochlorine pesticide, polychlorinated biphenyls, and siltation Monitoring Program developed under the Task 3 workplan approved by the Executive Officer.	POTW Permittees, MS4 Permittees, Agricultural Dischargers, US Navy	6 months after Executive Officer approval of Monitoring Program (Task 3) workplan
5	Submit a workplan for approval by the Executive Officer to identify urban, industrial and domestic sources of organochlorine pesticides and polychlorinated biphenyls and methods to implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls .	POTW Permittees, MS4 Permittees, US Navy	1 year after effective date of the amendment
6	Submit a workplan for approval by the Executive Officer to identify agricultural sources and methods to implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.	Agricultural Dischargers	1 year after effective date of the amendment
7	Special Study #1 – Submit a workplan and convene a Science Advisory Panel to quantify sedimentation in the Calleguas Creek watershed and sediment transport to Mugu Lagoon. Evaluate management methods to control siltation and contaminated sediment transport to Calleguas Creek, identify appropriate BMPs to reduce sediment loadings, evaluate numeric targets and wasteload and load allocations for siltation/sedimentation to support habitat related beneficial uses in Mugu Lagoon, evaluate the effect of sediment on habitat preservation in Mugu Lagoon, and evaluate appropriate habitat baseline, effectiveness of sediment and siltation load allocations on a subwatershed basis, and methods to restore habitat for approval by the Executive Officer. Additionally, this special study will evaluate the concentration of organochlorine pesticides and polychlorinated biphenyls in sediments from various sources/land use types. [2]	POTW Permittees, MS4 Permittees, Agricultural Dischargers, and US Navy	1 year after effective date of the amendment
8	Special study #2 – Submit a workplan for Executive Officer approval to identify areas of high organochlorine pesticide and polychlorinated biphenyls concentrations. The workplan shall evaluate the effects of flood control practices on organochlorine pesticides, polychlorinated biphenyls, and sediment loadings to Calleguas Creek waterbodies. Such practices include but are not limited to management of	Agricultural Dischargers, MS4 Permittees, US Navy	2 years after effective date of the amendment

TENTATIVE

Item	Implementation Action [1]	Responsible Party	Completion Date
	agricultural runoff, sediment reduction practices and structures, streambank stabilization, and other projects related to stormwater conveyance and flood control improvements in the Calleguas Creek watershed. [2]		
9	Special Study #2 – Implement removal actions and other management measures based on the approved Special Study #2 workplan.	Agricultural Discharger, MS4 Permittees, US Navy	3 years after Executive Officer approval of Special Study #2 workplan
10	Develop an Agricultural Water Quality Management Plan in consideration of the forthcoming Conditional Waiver for Irrigated Lands, or, if the Conditional Waiver for Irrigated Lands is not adopted in a timely manner, develop an Agricultural Water Quality Management Plan as part of the Calleguas Creek WMP. Implement an educational program on BMPs identified in the Agricultural Water Quality Management Plan.	Agricultural Dischargers	3 years after effective date of the amendment
11	Based on results of the Task 5 workplan approved by Executive Officer, implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.	POTW Permittees, MS4 Permittees, US Navy	5 years after effective of the amendment
12	Based on results of the Task 6 workplan approved by Executive Officer implement a collection and disposal program for organochlorine pesticides and polychlorinated biphenyls.	Agricultural Dischargers	5 years after effective of the amendment
13	Re-evaluation of POTW Interim wasteload allocations for organochlorine pesticides and polychlorinated biphenyls based on State Implementation Plan procedures.	Regional Board	5 years, 10 years and 15 years after the effective date of the amendment
14	Special Study #1 – Submit results of Special Study #1, including recommendations for refining the siltation load and wasteload allocations.	POTW Permittees, MS4 Permittees, Agricultural Dischargers, and US Navy	8 years after effective date of the amendment
15	Re-evaluation of siltation and sediment load and wasteload allocations based on Special Study #1.	Regional Board	9 years after effective date of the amendment
16	Effective date of siltation load allocation and wasteload allocation.	Agricultural dischargers, US Navy, MS4 permittees	9 years after effective date of the amendment
17	Special Study #3 – Evaluate natural attenuation rates and evaluate methods to accelerate organochlorine pesticide and polychlorinated biphenyl attenuation and methods to attain wasteload and load allocations in the Calleguas Creek Watershed. [2]	POTW Permittees , Agricultural Dischargers, MS4 Permittees, and US Navy	12 years after effective date of the amendment
18	Special Study #4 (optional) – Examine of the food web and bioconcentration relationships throughout the watershed to evaluate assumptions contained in the Linkage Analysis and ensure that protection of beneficial uses is achieved. [2]	Interested Parties	12 years after effective date of the amendment
19	Based on the results of Implementation Items 1-18, if sediment guidelines are promulgated or water quality criteria are revised, and/or if fish tissue and water column targets are achieved without attainment of WLAs or LAs, the Regional Board will consider revisions to the TMDL targets, allocations, and schedule for expiration of Interim Wasteload and Interim Load Allocations.	Regional Board	13 years after effective date of the amendment
20	Achieve Final WLAs and LAs	Agricultural Dischargers, POTW Permittees, and MS4 Permittees	20 years after effective date of the amendment

T E N T A T I V E

[1] The Regional Board regulatory programs addressing all discharges in effect at the time this implementation task is due may contain requirements substantially similar to the requirements of these implementation tasks. If such requirements are in place in another regulatory program including other TMDLs, the Executive Officer may revise or eliminate this implementation task to coordinate this TMDL implementation plan with other regulatory programs.
[2] Special studies included in the Implementation Plan are based on the TMDL Technical Documents.